

Power Distance and Knowledge Management from a Post-Taylorist Perspective

John Walton, Vishal Parikh

Abstract—Contact centres have been exemplars of scientific management in the discipline of operations management for more than a decade now. With the movement of industries from a resource based economy to knowledge based economy businesses have started to realize the customer eccentricity being the key to sustainability amidst high velocity of the market. However, as technologies have converged and advanced, so have the contact centres. Contact Centres have redirected the supply chains and the concept of retailing is highly diminished due to over exaggeration of cost reduction strategies. In conditions of high environmental velocity together with services featuring considerable information intensity contact centres will require up to date and enlightened agents to satisfy the demands placed upon them by those requesting their services. In this paper we examine salient factors such as Power Distance, Knowledge structures and the dynamics of job specialisation and enlargement to suggest critical success factors in the domain of contact centres.

Keywords—Post Taylorism; Knowledge Management; Power Distance; Organisational Learning

I. INTRODUCTION

CONTACT centres provide the essential final step in the value chain [1]. This involves sales (sometimes) and customer service (always). Following Adam Smith's notion of the division of labour to optimise economic output or resources, the contact centre concentrates the technology, manpower and knowledge to allow it to connect via the networks available to those prospective customers and clients the organisation wishes to reach.

Contact Centres' are often considered to be a prime example of "Taylorization". These are work and scientific management approaches, where the job design is decided by managers and enacted by workers (agents) with the aim of maintaining high efficiency and performance. These initiatives become more apparent when to contain costs, operations are outsourced, especially overseas. This is often to a nation where although wage costs can be lower, cross cultural conflicts can become evident in individuals as well as in management approaches. Recent studies have indicated that, technocratic control and performance driven operations, tend to erode the employees' optimism and positive attitude towards their peers and more importantly, towards their customers [2]. A corollary of this is that knowledge diffusion can suffer in such organizations. This is despite the observation that the key knowledge management enablers are people working in that organization [3].

One of the restricting factors is the high level of job specialization as well as limited communication with peers and customers.

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These highly controlled interactions can be frustrating to the employee which then leads to an ineffective outcome.

The degree of release of information within the groups or individuals is highly dependent on how powerful management structures are. This strongly correlates one of the cultural dimensions of the organizations, Power Distance, as put forth by Hofstede [4] in the 1980s. It is believed that Power Distance in an organization mediates the degree of freedom individuals have to act upon a certain situation or decision making in that organization. This study is aimed at identifying the influence of Power Distance on information structures in contact centres from an I-Space perspective and hence, to evaluate what the critical factors are, that one can use to assess the level of Power Distance in the organization in question.

The link between Power Distance and work culture has been further illuminated by Khatri [5]. In particular, his paper aids to synthesize the influential characteristics of Power Distance on human resource issues in contact centres.

The paper is designed first, to explore the literature with regards to Power Distance. Secondly, to review the human resource characteristics of Contact Centres and their influence mainly on Knowledge diffusion in the contact centre environment. Finally, we discuss how Power Distance can influence knowledge diffusion in contact centres.

II. TAYLORIZATION

Frederick Winslow Taylor [6] introduced scientific management in the early 20th century in North America. Fundamental to this approach was the axiom that management would undertake the *thinking and design* of work and the employees would *perform* the job. This involved the analysis of workers' activities into small tasks and the performance of which was to be in accordance with explicit instructions. By imposing strict limits on the workers' duties it centralized the power to their supervisors. Further, incentives and reward schemes in such tightly controlled environment enhanced outputs and productivity. Taylorism had two impacts: first, it emphasised precision, measurement and coordination: because these attributes were derived scientifically, they had an inherent legitimation. Second, it produced dramatic and measurable productivity gains and wealth creation. Given the power of the American pragmatists such as Dewey [7] it was a self-evident triumph of instrumental rationalism [8].

Such mechanization of processes and output was metaphorically described as a "Machine" organization that displays high bureaucracy and a centralized structure where decision making authority rests in the hands of the "middle line" and the "strategic apex" [9].

Although initially these principles were employed on the factory floor in physical production, the approach was also applied to clerical work. However, automation often overtook this, as copy typists, photocopying assistants and filing clerks were dis-intermediated by technology. However, there was one area that was difficult to automate in this way. This was the nexus of customer interaction, the call centre.

As it was not realistic to interact with all customers face to face, customers could however talk to a contact centre to raise and hopefully resolve issues.

The environment of contact centres has been considered as a pure example of “electronic sweatshops”, “white collar factories”, “mental assembly lines”, “battery farming” and “emotional labour” [10][11][12][13][14][15]. Contact centres’ operations and work culture determine the tight monitoring mechanisms and performance management deployed, thereby displaying high levels of empowerment in the organization. Job roles in contact centres depict no less than “*Taylorization of white collar information work*” [16].

Jobs in contact centres are the best examples of a package of routine and monotonous work, which is further controlled by techno-structures that are so scientific that they sense every motion of the agents during operational hours. As further supported by Wallace [17], though productivity and customer satisfaction were given a pretentious balance in all the contact centres investigated in their study, the focus was on the task oriented management style. Thus in terms of employee participation and job specialization employee participation is diminished where mass-customization and ‘assembly line’ oriented work is favoured [18].

The specialization of work may also comprise adopting accents, building rapport, using pseudo names, etc., which are blended with process oriented tasks required to balance quantitative measures. This obviously forces employees to “Do what is asked to Do” and undervalues skills that may be necessary to retain customers loyalty by ‘going that extra mile’ for the customer.

There is little participation of employees in making decisions whilst on calls. In businesses (for example, contract mobile phones or home broadband services in the UK) where customers expect monetary benefits in return for their loyalty, advisers show empathy (which they are asked to) towards customers, however, they have very limited discretion in offering a one off concession to customers. It is observed in our experience as employees of contact centres in the past that this reward of loyalty is tightly controlled by team supervisors. This is further tightened in outsourced contact centres where the aim is to keep the cost to the clients as low as possible whilst driving efficiency measures as high as possible [19].

The demand for efficiency and productivity requires the enforcement of routine work practices, limited discretion over calls to think and communicate and action-oriented scripts that further delineate skills of the employees [20][21]. Such monotonous activities mould employees to no less than robots, however, emotional burnout is still displayed by employees, especially by those who work in quantity-targeted contact centres.

Moreover, the tight control of supervisors over employees’ productivity and duties sets up an environment of threat and fear which further inhibits them performing above the mark. Some supervisors handle this restriction of performance strategically by a typical psychological contract of linear returns.

This is where the demand is on the employees to contribute efficiently to the team score card and handle extra responsibilities as and when required by the supervisor.

There is therefore the perception that there is a possibility of the employee being recognized at management level through the supervisor on a longer run. Under this relationship, it is not surprising to see employees working for longer shifts, extending shifts without remuneration and working over the weekends too. This is quite evident from a study conducted over the quality of work life through their comparison of in-house and outsourced contact centres [22]. However, the question remains - What happens when such psychological contracts are breached?

As a consequence, call centres, which strive to achieve performance and efficiency, “*are designed more along the lines of service factory rather than a customer service delivery*” [23]. Obviously, they were intended to embrace cost reduction and the mass-customization strategy available using services such as voice and telephony technologies, chat and e-mail.

From the foregoing it may be thought that contact centres have been understood as pure examples of performance driven management structures and power oriented mechanisms to deliver clients’ expectations at the bare minimum cost. Raz and Blank [24], however, through their thorough culture based study in one of the Israeli call centres, have portrayed the traditional quantity/quality dilemma as an “Ambiguous Professionalism”.

As described by Peaucelle, Taylorism focuses solely on maximizing productivity and the volume of outputs [25]. Post-Taylorism focuses on five objectives: productivity; flexibility; deadlines; quality and diversity. Though Peaucelle’s focus was more inclined towards production environments, the characteristics of Post-Taylorism are now being observed in contact centres.

This is in response to the market conditions of environmental velocity and product sophistication which in turn lead to the higher information intensity of the customer interaction [26]. Job roles in contact centres have to meet a much more discerning variety of tasks handled by employees. This is in accordance with the law of requisite variety [27] which states that the variety of responses in a system has to equal that variety of stimuli if the substrate in question is not to disintegrate into chaos. Clearly the demand for sustainability in terms of quantity as well as quality is here to stay in the once supposed ordered world of the contact centre. How this challenge is met is the subject of the next section of the paper.

III. POWER DISTANCE-POST TAYLORISM

The fundamental feature of Power Distance in an organization points out the supervisor-subordinate relationship in that organization. According to Hofstede, Power Distance is “*a measure of the interpersonal power or influence between the boss and subordinate as perceived by the less powerful of the two*” [28]. Furthermore this is exemplified by the contextual mapping of Power Distance to parent-child, boss-employee and teacher-student relationships observed in Indian and Japanese culture [29].

Power Distance is a derivation of Mulder's [30] philosophy and experimentation on social structures. He defines Power as "potential to determine or direct (to a certain extent) the behaviour of another person or other persons more so than the other way round".

Where Power Distance is low, the relationship between superiors and their subordinates is flat and transparent. Subordinates are encouraged to channel their ideas towards decision making and participation is encouraged so as to communicate horizontally within the teams and vertically. Where Power Distance is high, a transaction based relationship is observed where supervisors have limited job based interactions with subordinates and where there is minimal participation expected and observed on either side.

It has been proposed that a strong relationship between Power Distance and different organizational characteristics that result from the strength of the Power Distance can be observed in that organization [5].

According to him, Power Distance in organizations has certain consequences which are very similar to the effects of implementing Taylorism or 'Post Taylorism' in the organization. It can be argued that Power Distance enabled by deploying monitoring and surveillance mechanisms in contact centres can create a threatening environment in the organization.

High Power Distance is implicitly nurtured in certain cultures, such as India where Power Distance is highly visible in Vertical Collectivism resulting in "personalized relationships" between a boss and the employee, thereby creating a biased environment [31].

This destroys the horizontal collectivism at the "operating core" and the team work. The low morale and breach of the psychological contract between supervisors and other employees can result in counterproductive workplace behaviour [32]. Indirectly, this counterproductive work behaviour is a result of emotionally exhausted employees in the case of contact centres and hence, they are victims of Post Taylorism and High Power Distance.

Taking this a stage further, we propose that Power Distance in contact centres can be analysed as *Domain Specific Power Distance* when the characteristics of Power Distance are compared to specific cultural aspects of contact centres. This is because Power Distance can be considered to be a product of the national culture. In fact, this was the major contribution of Hofstede and still illuminates organisational behaviour to date when considering the relative performance of firms in different cultural contexts. However, the principles espoused by the contact centre as an organisation, prompts the proposition of a domain specific variant of the contribution by Hofstede.

Figure I depicts the characteristics of Taylorism identified in existing literature and how it compares to the consequences of high Power Distance in organizations. However, a low Power Distance orientation eliminates one or more traits of Post-Taylorism.

Base Proposition: The degree of Post-Taylorism in Contact Centres is directly proportional to the degree of Power Distance

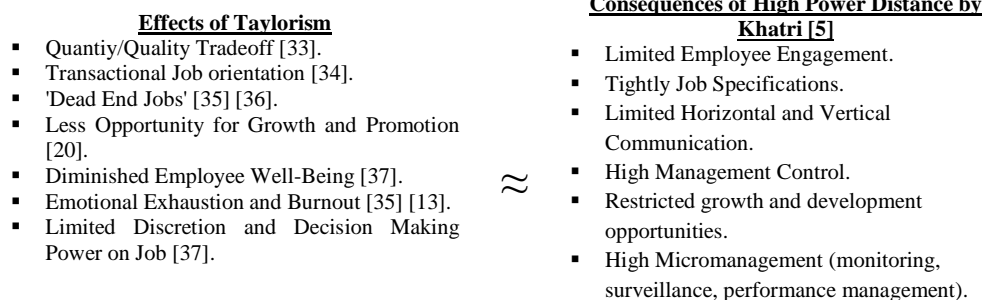


Fig. 1 Comparison of Post Taylorian characteristics with Power-Distance characteristics

IV. POWER DISTANCE-POST TAYLORISM-KNOWLEDGE MANAGEMENT

Employees in contact centres are knowledge workers. Whether it is an inbound, outbound or a blended operation, contact centres display a high exchange of knowledge internally and externally. From the start of their employment in this environment they will experience a variety of knowledge management sessions to prepare them for their role. The formal training sessions aid the employees to field customer calls and provide assistance to understand and manage their targets. For some outsourced contact centres, cultural and communication training is also incorporated as a part of their induction curriculum to help them adapt to the culture of the principal's (client) country. However, as Townsend [38] confirms, "*The contents of the training tend to include basic knowledge about the company's product and services, information systems and company policies*". Such training is highly focussed and is designed to help employees acquire brand awareness, overall product information, compliance procedures and, tune them psychologically into the social environment they will be in.

In an organizational context, Knowledge is defined as, "*what people know about customers, products, processes, mistakes, and successes*" [39]. It is too common and easy for an organization to understand what knowledge and its management is to the people.

The literature abounds with the extensive theories of knowledge management and the respective models. However, the application of those models is blur and has little coherency in the real world. In lieu of this, Koh and her colleagues [40] proposed a model from their study at one of the contact centres in Sheffield, UK, that enables the contact centre to create knowledge and "information in action" to be managed. They proposed measures satisfying five roles of knowledge: Knowledge Acquisition; Utilization; Adaption; Distribution and Generation, that encompasses the knowledge classified as tacit, explicit and, cultural. According to them, the management just needs to communicate the message of importance of knowledge in the environment and make the entire process sound easier and highly motivating.

However, the model neglects to consider the ability and willingness of employees to participate in managing knowledge. Moreover, it does not consider the internal exchange of information as a critical component, which is very limited if the contact centres follow the scientific management approach. Where meetings are to just update the employees of process or product policies and where every minute of the employee is under surveillance, it is challenge to deploy the measures proposed by Koh and her colleagues.

A. Barriers to Effective Knowledge Management in Contact Centres

Bollinger and Smith [41] have carefully framed the barriers to be considered while implementing Knowledge Management in an organization. Though their view, very similar to others, is that the motivated people are the key to successful knowledge management, they also have considered the human resource related issues, which may defy the basic foundation of knowledge management.

The biggest challenge in contact centres is that much of the knowledge comes into action with customer interactions and furthermore, the knowledge applied here is mostly tacit. For example, the knowledge base may be available to employees in a help desk environment to follow pre-specified steps to solve a particular solution. However, employees who are competent enough to handle repeated situations may provide quicker and easier resolution for the customer. These actions are highly tacit, developed with experience and, according to the employee's discretion. "*The gap between what people do to perform their jobs and how it is documented is difficult to bridge due to the spontaneous actions people take in response to unexpected challenges and problems*" [42].

Also, knowledge creation and sharing is highly dependent on people's perception of their role within the team. In strong power structures, employees may show resistance towards knowledge sharing amongst groups and be afraid of being called "big mouth" by other colleagues.

Knowledge management should not be perceived as control, which is possible in Post-Taylorian structure and may defy the communication factor within the Knowledge Management cycle. According to Scheraga [43], individuals may be encouraged to share information and knowledge through reward and recognition schemes, however, this may raise the quantity of knowledge sharing numbers, but it may be of diminished quality. The process of learning can be further damaged because of horizontal competition within the teams resulting in little horizontal diffusion. Also, individual reward schemes may damage the team working culture.

Another barrier to knowledge development in organizations is the individual's unwillingness to share knowledge because of the sense of knowledge to that individual as his competency in that organization. "Competency is Dependency" is a very common philosophy adopted by many employees in organizations where the turnover is high and unpredictable. The idea is to create dependency on yourself to make the management aware of how critical the level of knowledge is in your organization. A different perspective would be a fear of losing the personal value in the organization by sharing what is known.

The above examples of barriers are confined to the contextual analysis of contact centres. There may be other factors which are generically observed in deploying knowledge management and organizational learning policies. However, the question is- how is knowledge management process with these barriers?

B. Knowledge Assets and Added Value

Knowledge assets allow an organisation, in conjunction with the other factors of production to add value. A definition is '*stocks of knowledge from which services are expected to flow*' [44]. As far as contact centres are concerned, the knowledge has to be available to the agent handling the call. However, in contact centres, the knowledge required for a call varies enormously. The popular conception is of a call centre supplying routine information on demand. If this is done well, then a value discipline of *operational excellence* is being followed.

Post Taylorism would dictate that the agent should only be supplied with *just enough* knowledge to field the call. Knowledge, its generation, propagation and diffusion is expensive. If alternative value disciplines are being advocated such as customer intimacy, then the agent will require significantly more knowledge. Also if there is high information intensity and environmental velocity, then the agent will require significant intellectual capital. The work done by deploying knowledge assets is called *epistemic work*. The more epistemic work can be performed by the structural capital the less contribution will be required from the human capital.

C. Knowledge Codification Abstraction and Diffusion

According to Boisot [45], Information can exhibit three characteristics, the extent of codification, the level of abstraction and the degree of diffusion. Boisot argues that codification and abstraction are necessary to isolate the salient aspects of data that therefore contribute to information. *Codification* refers to the process of assigning categories to data to simplify its subsequent processing. As an extreme case, a large amount of text data can be used to describe a concrete event or structure. By codification, fields can be used to create a record for that entity which can then reside in a relational database. Codification can therefore be considered as a method of shedding surplus data so as to economise on data processing.

Abstraction affords the manipulation of codified data to reduce the data processing overhead even further. Correctly applied abstraction allows the focus on codified data that reflect concepts such as causal or structural relationships. Whereas codification and abstraction work together to optimise the analytical tractability of data, the third characteristic, diffusion is distinct. *Diffusion* is the extent to which information can be reached by certain data processing agents operating at different levels of codification and abstraction. It certainly *does not* mean adoption. Taken together, codification, abstraction and diffusion have been used to furnish a visible representation of a logical space, which is the famous I-Space [45]. The logical space proposed by Boisot is idealised so it can be used to model any information system, be it a firm, an industry or a country.

A scaling aids us to analyse the information structure of an organization considering the three attributes (See Table I).

Those agents are data processing agents which means that they are presented with data which will inform them. From this, it is possible to generate knowledge that is a disposition to act. For Boisot, the greater the level of codification and the greater the level of abstraction, the higher will be the *possible* degree of diffusion.

V. POWER DISTANCE AND THE I-SPACE

A. Power Distance-Knowledge Codification

To simplify, codification is the degree of the categorization of information gained through a lived experience or situation [46]. For example, the notes logged by the employee in a contact centre whilst on calls, are highly uncoded. The process of codification in this case, is how the agent uses this information so as to bring out the first hand fix for the customer. This is achieved through automated information that is already available to the agent on the call and other specific information gathered through efficient probing and customer handling skills. It may refer to a basic piece of information or troubleshooting steps that offers a clear intent or purpose of their existence as information. In a tightly monitored environment, obviously, data such as call volume, agent availability, calls abandoned, agent's off-call time are the kind of information that speaks for itself.

Also, customer related information is readily available to agents so as to maintain limited interactions over the call. Such contact centres are highly post-Taylorian considering that the more readily available the information and codified knowledge, the less time it takes to diffuse that knowledge to the customer, which implies higher productivity. In contrast to this, where quality is emphasized over numbers, that is, where Post-Taylorization degree is less, codification is less because of the higher degree of tacit knowledge in action. Agents are allowed to handle the situation in 'their own way'. Discretion and interaction over calls is measured, however, not targeted, which enables higher knowledge flow. However, this creates an environment of dependency upon agents, which obviously, may not be a desire of efficiency oriented management.

Proposition 1: Power Distance is directly proportional to the degree of Codification, moderated by the degree of Post Taylorism in contact centres.

TABLE I
SCALING GUIDE BY BIOSOT [44]

Position on Scale	Codification	Abstraction	Diffusion
	Is the knowledge:	Is the knowledge:	Is the knowledge:
High	Easily captured in figures and formulae? Does it lend itself to standardization and automation?	Generally applicable to all agents whatever sector they operate in? Is it heavily science based?	Readily available to all agents who wish to make use of it?
Medium	Describable in words and diagrams? Can it be readily understood by other from documents and written instructions alone?	Applicable to agents within a few sectors only? Does it need to be adapted to the context in which it is applied?	Available to only a few agents or to only a few sectors?
Low	Hard to articulate? Is it easier to show someone than to tell them about it?	Limited to a single sector and application within that sector? Does it need extensive adaptation to the context in which it is applied?	Available to only one or two agents within a single sector?

B. Power Distance-Knowledge Abstraction

Abstraction allows the quantification of knowledge by determining the number of categories under which information is codified [47]. The higher the number of categories, the higher abstract information will be. In case of contact centres, the information structure is too generic to be termed 'concrete'. In other words, knowledge in contact centres is concentrated, though in complete regiment and all sectors applicable. That is the very essence of very specialized job roles, where the information structured allows to routine the tasks, control is institutionalized by formalized procedures and it is believed that most of the knowledge is explicit and which enables them to spread the message that this job can be done by anyone 'across the street'.

Perrow's Typology on task complexity and Boisot and Child's [47] on structuring information (See Figure 2) allows us to understand that taking into account the features of Power Distance, those contact centres that exhibit high Power Distance codifies and abstracts information higher thereby, positioning them in the Minimum Complexity quadrant. Where Power Distance is low, actions are less pre-defined and performance is by the virtue of quality of knowledge incarnated than knowledge already available making it more complex to synthesize.

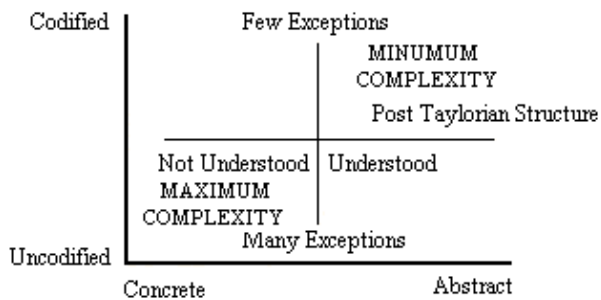


Fig. 2 Synthesis of Perrow-Boisot and Child [47] Framework

Minimum Complexity is defined here, by the high degree of codification through which tasks can be easily designed and specialized and the high degree of Abstraction through which information is easy to understand and apply. In contrast, Maximum Complexity is defined by the virtue of how difficult is it to codify knowledge or how employees are allowed to handle the situation in 'their own way'. Knowledge is concrete created and applied through the combination of information already in hand and emotional intelligence that builds competency. This does not necessarily mean that codification or abstraction is at the lowest. The idea is to draw links between the level of codification and abstraction with the degree of freedom and governance to knowledge workers.

Proposition 2: Power Distance is directly proportional to the degree of Abstraction, moderated by the degree of Post-Taylorism in contact centres.

C. Power Distance-Knowledge Diffusion

Diffusion in scientific terms by Merriam-Webster is defined as "the process whereby particles of liquids, gases, or solids intermingle as the result of spontaneous movement caused by thermal agitation and in dissolved substances move 'from a

region of higher to one of lower concentration'" or "the spread of cultural elements from one area or group of people to others by contact".

The above definitions manifests two aspects of diffusion applicable to the knowledge management discipline, that is, a) the flow from a region of higher concentration to that of lower concentration and; b) the degree of diffusion being mediated by the intensity of contact between the individuals, groups or clusters. From a disciplinary perspective, the structure of knowledge is interpreted by the virtue of the information complexity in the system, as discussed in the previous section. However, as Kauffman [48] elaborates, where codification and abstraction is analyzed by the number of connections between the individuals, groups or clusters (cognitive complexity), diffusion refers to the degree of intensity between this connections (relational complexity). There may be a smaller number of connections, that is, less cognitive complexity, however, the strength of connectivity between those connections may be higher, which means high relational complexity. This further helps Kauffman identify the positions of different structures under I-Space developed by Boisot.

According to his theory of Boolean networks, a post-Taylorian environment exhibits a bureaucratic structure and hence, cognitive complexity and relational complexity are both low. This implies a less diffusion of knowledge in the structure. However, this highly depends on the individuals' perception towards the diffusion context. As per our previous discussion on barriers to knowledge management, people are the key enablers and knowledge diffusion is the key to learning. In a high Power Distance structure, relational complexity is limited because of minimum complexity of information due to specialized job roles, and also the performance oriented structure which enforce certain anti-diffusion mechanisms such as competition within between the teams and allowing access of knowledge on a 'need to know' basis. Further, the participation of individuals in the knowledge diffusion process is preemptive if the perception of a group of people towards the 'middle line' or 'strategic apex' is ambiguous of its motives to encourage knowledge to interact. In contrast to this, in contact centres with a low Power Distance mechanism, a platform for knowledge diffusion is created so as to enhance learning within the teams and at operational level. A sense of freedom allows the flow to sustain the epistemic value of the discipline, and it spans across the hierarchies displaying the attributes of relational psychological contracts between subordinates and supervisors. Communication between customer and an employee is relatively unrestricted, hitting higher a note of what is called 'customer education'.

Proposition 3: Power Distance is inversely proportional to the Diffusion of Knowledge moderated by the degree of Post-Taylorism in contact centres.

VI. CONCLUSION

Given the advance of technology and the convergence of computing, mobile applications, social networking and internet 2.0 most call centres that undertake routine processing will become automated.

The contact centres that remain will exhibit high levels of skill, scarce professional competences and prompt and rapid resolution of issues presented to them.

Whilst contact centres will still be at the forefront of the technological frontier, the thesis of this paper is that the *management* of this infrastructure is one of the critical success factors. This, along with insights into how knowledge which drives the quality of advice is generated is also crucial to success. Essentially, there are tensions, first between efficiency and effectiveness. The centre adds value to the firm, but at the same time consumes resources. When discussing effectiveness and efficiency, we have chosen to emphasise on Power Distance. This is because in our recent work this has been shown to be the predominant consideration of the case studies undertaken [19]. However, taking a strategic perspective, the other four dimensions of the work of Hofstede have to be considered. In a global world the short term versus long term orientation, the so called Confucian dynamism may come into sharp focus.

Second the exploitation of existing knowledge as against the exploration of possible new knowledge. The generation and diffusion of knowledge will occur spontaneously by the action of the experience curve. However, given that knowledge has been defined as a disposition to act, more effective mechanisms are required. The SECI spiral of Nonaka [49] embracing as it does the socialisation of individuals for collective learning has been one of the most enduring initiatives in knowledge management. Whilst in the short term the cost associated by embracing the framework has to be absorbed, the dividend in more effective collective action will hopefully fuel further investment.

Third, the generation and diffusion of knowledge whilst at the same time guarding against error and erroneous conclusions. Ultimately knowledge management can be argued to be an intervention to address possible zero learning. In this case, atrophy of the firm will occur if this is not addressed. The social learning cycle (SLC) [46] is a collective way of stimulating and diffusing knowledge. The SLC has the built in advantage that at various stages, for example, problem solving, step 2, the knowledge is tested and assessed as to its efficacy.

Future research should in our opinion, try to promote and assess the SECI spiral and the SLC in an operating context. A longitudinal case study, supported by rich evidence would provide the basis for a discussion by scholars in this area to promote good practice. In addition some cross sectional case studies in call centres in different market segments could furnish evidence to detect how such frameworks can be managed by identifying critical success factors that are possible industry specific.

One of the assumptions of the industry is that there will be a turnover of agents, which tends to suppress long term knowledge management initiatives. If the apotheosis of a call centre were recognised to be air traffic control, and the professionalism of the aviation industry were recognised, then this assumption might well be overturned.

Finally this paper has a super-ordinate goal. For effective development of this domain, directional thinking is always necessary.

However in and of itself, such cognitive processes can only furnish threshold characteristics.

Superior performance, core competences and innovation come from something rather more, and that is *inter-sectional* thinking.

It is the ability to synthesise and coordinate disparate elements to a coherent whole that characterises the progression and maturity of human civilisation and, so it is with human beings, connected together by a web of networks, co-operating, depending, developing but never destroying always advancing.

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